TRANSPORTATION STUDY

FOR

ISLE ROYALE NATIONAL PARK

Report Edition: December 28, 2005

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Sponsored by the National Park Foundation
Washington, D.C.

"For an off-shore park, everything costs more to do. Even a two-by-four gets handled four times (when delivered to the island)."

Rhonda Brooks, Chief of Transportation
Channel Islands National Park, California

Figure 1

Isle Royale National Park and Surrounding Lake Superior Region

TABLE OF CONTENTS

I. INTRODUCTION

Purpose of Study

On May 4, 2005, the National Park Foundation provided me with a two-page document titled, "2005 National Park Transportation Scholars Program." It physically described Isle Royale National Park and gave a rundown of the Park's transportation system and vessels, both Park-owned and concessionaire. The document also had the following project description for the study:

> *Isle Royale National Park seeks to have the different transportation modes of this wilderness park analyzed and critiqued by experienced maritime scholars. The goal of the study will be to:*
>
> > *a) critique current transportation modes, equipment and practices for efficiency and safety;*
> > *b) propose improvements, if any, to current transportation operations within current and anticipated budget constraints; or,*
> > *c) recommend interface with existing transportation systems, both public and private.*

On May 9, in a conference call with myself and Eddie Gonzalez (Director of the Foundation's Grants and Programs), the Park's Chief of Maintenance, Keith Butler, said that the study should answer these questions.

> "How efficient can the Park's transportation system be?"
> "What should the Park be transitioning to?"

On June 29, the Park Superintendent, Phyllis Green, summed up the purpose of the transportation study this way:

> "If the Park was operating as a business, then what should be done?"

I was curious if there were any limitations to the study. So in a manner of speaking, I asked the Superintendent if there were any "sacred cows." She said there were none.

Considerations for Success Assessment

Although I am not an "experienced maritime scholar," I am satisfied with having met the above objectives to the extent made possible by these two considerations:

1. The number of maritime transport systems that I looked into were all unique in at least one way or another. Isle Royale's is no exception.

2. The Park's marine vessels either transport a variety of items or they are lumped

together in an operating budget that covers multiple functions. Analysis, therefore, was bound to be limited as clear costs and revenues for each cargo-type transported could not be easily broken down.

General Recommendations

Many of the recommendations in this report fall into three general categories:

1. The Park should experiment with "pilot operations" (short term test cases). They should not avoid experimentation due to some fear of a *possible* consequence. Change is always resisted by someone, somewhere. But anticipated consequences do not always pan out. If they do, then simply return to the previous method of operation.

2. In the Park's day-to-day functions, take a hard look at "the little things" and seek the input of the employees involved with those functions. A number of small, inexpensive changes will produce a savings in wages, improve safety, and improve morale.

3. In light of the Park's desired business approach for this study, an obvious and fundamental recommendation is to maximize revenues through ticket sales and user fees. This report addresses various ways how this can be done, but the most significant fall into three sub-categories:

- View visitors to the Park as "customers." Make small modifications to maximize the capture of potential visitors, and consider experimental transport services to areas where potential customers are concentrated.
- Make the Park and its transport services attractive to short-stay, low-impact visitors (i.e., visitors who desire minimal or no access to wilderness areas).
- Devise a pro-business policy toward the concessionaires. This study assumes their success is the Park's success and addresses some of their long-term needs.

A Word on Credits

Most images and photos in this report are courtesy of Isle Royale National Park. Credit is given only to those images ***not*** provided by the Park.

Many of the ideas provided in this study are not mine. However, I have purposely refrained from crediting names to any ideas. As humans, we sometimes judge an idea based on our impression of the person who presented it. But my hope is that the ideas presented herein can be judged only on their merit.

I hereby thank the Park and the Foundation
for the opportunity to conduct this study.
- Jack Salmela

II. INVENTORY OF MARINE TRANSPORT VESSELS

A. Park-owned Vessels

"Ranger III"
- Twin engine, multiple-deck ship with 9 crew members
- 165 feet long.
- Transports up to 128 passengers, cargo fuel (#2 diesel), referigated and dry goods, solid waste. Has a telescoping boom crane on the bow deck that can hoist and place large items for stowage (equipment, private pleasure craft, dumpsters, etc.).
- During regular season, runs 2 round trips a week between Houghton, MI, and Mott Island/Rock Harbor.

The following four vessels are considered the Park's "Tug & Barge" operation.

LCM
- Self-propelled, landing craft-style vessel with drop-down bow gate.
- 70 feet long.
- 60 ton capacity
- Transports a variety of construction materials, sand & gravel, demolition debris, solid waste, mobile heavy equipment.

Tug
- 45 feet long.
- Provides propulsion for the construction barge and the gasoline barge (below).
- Also referred to as "The Shelter Bay."

Work Barge
- Basically a floating platform for working or transporting.
- Propelled by the tug (see above).
- 110 feet long.
- 200 ton capacity
- Transports heavy construction material and large demolition debris.
- Sometimes referred to as "The Beaver."

Gasoline Barge
- Propelled by the tug (see above).
- 70 feet long
- 34,200 gallon capacity (gasoline and/or aviation fuel)
- Double hull
- Named "The Greenstone II."

Note:
34 small boats make up the Park's island fleet. They are used by Park staff for day-to-day activities and are not used for cross-lake access. They are not included in this study.

B. Concessionaire Vessels

The primary mission of all concessionaire vessels is passenger transport. However, the marine vessels have the capability of transporting small recreational equipment such as canoes, kayaks, camping gear, and small outboard motors.

"Voyageur II"
- 60 feet long
- 39 passenger capacity (assumes a luggage weight of 40 lbs per passenger)
- Sails from Grand Portage, Minn., to Windigo, circumnavigates the island with stops at various campgrounds, the Rock Harbor Visitor Center and Lodge, Malone Bay Ranger Station; then returns to Windigo and Grand Portage.
- Provides US postal service to the island.
- Owned by Grand Portage - Isle Royale Transportation Line, Superior WI.

"Wenonah"
- 63 feet long
- 100 passenger capacity
- Operates between Grand Portage and Windigo.
- Owned by Grand Portage - Isle Royale Transportation Line, Superior WI.

"Isle Royale Queen IV"
- 100 feet long
- Design passenger capacity of 100
- Operates between Copper Harbor, MI, and Rock Harbor.
- Owned by The Isle Royale Line, Copper Harbor MI.

III. HOUGHTON DOCKYARD OPERATIONS

This is where it all starts. Primary transportation to the island starts at the dockyard at Park headquarters, Houghton, Michigan.

Dockyard Operating Period –

> Isle Royale National Park is not open in the winter. Each spring the island gears up for the summer season when it is open and fully operational. In early fall, the island gears down for winter closure. During the summer and the periods of gearing up/gearing down, the dockyard is also operational in order to support the vessels that support the island.

Staging Point for Island Employees, Visitors, and Goods –

> Transport of the island's employees, visitors (non-concessionaire), and most goods commences at the dockyard. And of all the transportation issues addressed in this report, improvement of day-to-day functions at the dockyard are within the Park's control and can be addressed for little or no cost.

A. Contract Deliveries

Nature of Problem

For a remote, water-access-only facility such as Isle Royale National Park, a primary logistical need is on-time deliveries of goods. When delivery commitments are not met, everything else down the operational line gets impacted. Park personnel call it "the domino effect." Not only are the ultimate users of the expected goods forced to incur delays, equipment and salary time of successive operations gets wasted.

General Example –

Consider deliveries for a typical construction project on the island. The affected operations and staff can include but may not be limited to:

- Dockyard transfer of goods from delivery vehicle to boat (especially vulnerable if equipment for special handling has been rented),
- Boat crew,
- Unloading crew on island,
- Construction crew on island,
- Successive delivery of material necessary to complete the structure,
- Schedules of inspectors (building, health, environmental).

Specific Example #1 –

On July 12, 2005, the tug & barge captain, Joe Bergan, came to Houghton with the working barge for the purpose of picking up wood (Douglas Fir) for dock construction on the island. When Joe arrived, he found out that the construction wood did not and would not arrive any time soon, causing frustration and making the tons per hour for his trip to Houghton really inefficient.

Although the barge hadn't come in empty, it didn't turn out to be much of a consolation. Joe had brought in old concrete footings, part of the construction debris from the old water tower that had been demolished on the island. However, the footings were supposed to be picked up at noon. But since no one showed up, Joe simply left.

When a truck driver eventually did arrive to take the footings but found that Joe was gone, he asked me of all people for permission to operate the barge crane so he get the footings off-loaded that day as originally planned.

Specific Example #2 –

This example demonstrates how a delay in delivery can even impact the surrounding community.

The Department of Agriculture handled a contract for a mobile home to be delivered for Soil Conservation personnel on the island. But they were not aware of -- or sensitive to -- the island's logistical needs. The DOA office is located in St. Croix, WI, and the mobile home came from Atlanta.

Park personnel wanted to load the mobile home on the barge on a Wednesday before the Ranger III came back at its usual time to dock at the Houghton headquarters. But the mobile home arrived too late and an alternate dock site called the Lily Pond had to be used instead. (The Lily Pond is a Corps of Engineers dock located a good distance out of town on the canal leading to Lake Superior.) So the over-size mobile home had to be hauled through the narrow downtown streets of Houghton and Hancock and over the bridge connecting the towns.

Recommendations

1. Add a "liquidated damages" clause to any material delivery contracts. Within the clause, provide a reimbursement scale intended to cover costs incurred by the Park due to late material delivery. Be explicit that any reimbursement responsibility stays with the prime contractor. State that the Park shall be held clear of any subsequent sub-contracts.

2. If the Park will indeed consider changing their contract language, then that would be a good time to meet with Park employees to solicit other changes that should be made to contract language. There can be contract requirements on how deliveries will be received at the dockyard.

   For example, there can be a requirement that all items of a certain size and weight shall be on pallets and wrapped. For items not in compliance, standard fees for dockyard adjustments by Park employees can be deducted from the vendor's invoice.

B. Groceries

Grocery orders from island employees go to various grocery stores in the Houghton-Hancock area. Park personnel in Houghton then pick up the orders and load the groceries onto the Ranger III. The general process of handling groceries destined for the island is described in the following section.

Acquistition and Shipping

From the store shelves to the island employees' living quarters, groceries are handled seven times.

Cold and fresh groceries –

1. The grocery store packs the items;
2. Two of the Park's dockyard employees drive to each store and place the packed items on pallets on a stake-bed truck (this step takes about a half day);
3. Back at the dockyard, the two employees forklift the pallets from the truck to baggage carts, trailer the baggage carts onto the Ranger III, and place the goods into the Ranger III's cold-storage units*.
4. The Ranger III unloads the cold and fresh groceries onto baggage carts at Mott Island and Rock Harbor;
5. Island employees unload the groceries from baggage carts and load them onto small trailers.
6. The groceries are unloaded from the small trailers and placed in front of employees' living quarters.
7. The employees take their groceries inside their living quarters.

* *Note:*
The Ranger III's walk-in freezer is dedicated to Rock Harbor. It's chest freezers are dedicated to Mott Island.
For the Ranger III's walk-in cooler: the right side is for Mott/Windigo, left side is for Rock Harbor and concessions.

"Dry" Groceries –

The difference with dry goods is that the groceries are handled in bulk by mechanical means for the first 2 or 3 steps.

1. The stores pack and place the groceries onto pallets. Sometimes the groceries are wrapped.
2. Two Park employees use a pallet jack for loading onto the stake-bed truck.
3. At the dockyard, the groceries are unloaded with a fork lift and placed in the warehouse.

4. The two employees cut the shrink wrap and hand-place the groceries onto baggage carts, which are then trailered onto the Ranger III.
5. At Mott Island, the carts are trailered off the Ranger III. Park employees remove the groceries and place them onto trailers.
6. The groceries are delivered to employees' quarters.
7. Employees bring their groceries into their living quarters.

Anecdote: "The Grocery Run"

On June 21, 2005, I went on a "grocery run" with two Park employees, both of whom were dockyard maintenance workers. Although routine grocery runs are made to a number of stores in the Houghton-Hancock area, we stopped at only two stores on this particular run.

First stop: Pat's IGA Grocery Store, Hancock heights –

The platform of the stake-bed truck didn't even have the height to meet flush with the store's docking platform. The lead maintenane worker had to arrange two heavy pieces of 8"x8" lumber under the truck's back wheels. However, the driving surface wasn't even paved. And with recent rain, the sand was slippery, making it very difficult and time-consuming to get the back tires up onto the lumber.

The grocery pickup system was terrible. The Park's two maintenance workers had to go retrieve shopping carts full of either dry, cold, or frozen boxed groceries. They brought the carts to the loading platform, and hand stack the boxes onto the pallets.

Second Stop: Keewinaw Co-op, Hancock –

Access to store with the stake-bed truck was even worse. In this case the main entry had to be used, and the truck conflicted with customer vehicles, both in the street and the parking lot. Upon leaving, the truck had to be backed out into the street.

Although upright dollies were used to get the groceries to the truck, the two Park employees still used the same system of stacking the boxes onto the pallets. However, in this case, there was no loading dock and the truck's rear platform-lift had to be used.

Summary of Problems

I've categorized below the issues with the grocery acquistion and shipping process.

Physical Labor -

> For the grocery pick-up runs, the lead maintenance said that he used to use a forklift to hoist the Ranger III's baggage carts on-and-off of the stake bed truck. The stores would then load the baggage carts, eliminating a lot of extra handling and human effort. This worked for two years until the stores complained that the baggage carts took up too much room. But now the work required is more labor intensive.
>
> On top of that, the amount of heavy physical labor that's required is surprising. Not only did one of the employees have to manhandle the 8x8 lumber as described above, I watched him manhandle a keg of beer into the Ranger III's refrigerator

Small, Loose Packages -

> Grocery stores may prefer packing items into any leftover boxes that they find available after stocking their shelves. And boxes of varying sizes can be matched to the sizes of particular grocery orders. But small packages of varying sizes certainly don't help the Park's grocery pick-up process. Such packages take manpower to load, don't stack well, tip over easily, catch on door frames while in transit, etc.

Keeping Food Fresh -

> Quality of produce can also be an issue. Park personnel have complained that the stores tend to pack marginal produce that would otherwise get passed up by more particular in-store customers.
>
> Another issue is the length of time it can take for fresh goods to reach the island. And on hot summer days, those fresh goods can end up sitting on the stake-bed truck as it makes its rounds through the Houghton-Hancock area.

Recommendations

1. *Exclusive Grocery Supplier*

> As a single-season test case, make grocery pick-up arrangements with only one or two grocery stores in the Houghton-Hancock area. A cooperating store should be required to accommodate the needs of the Park's pick-up personnel and their equipment.

For example:
a) The store(s) could be required to load the Park's grocery order into the Ranger III's baggage carts; or,
b) At least require that the store shrink wrap the grocery loads and place them on pallets;
c) Require adequate loading docks (right height for truck and paved approach).

Note:
Obviously, it would have to be a condition of Park employment that employees can only get their groceries from stores that are willing to comply with the Park's grocery pick-up requirements.

2. *An Island Store*

As part of the test case, allow a cooperating store to have exclusive stocking rights to a store at Mott Island. This store would stock basic staples only. At the end of the season, the Park would agree to buy out any remaining inventory and either ...
a) sell the remaining inventory to island employees at slashed prices;
b) donate the remaining inventory to a food shelf; or,
c) donate the remaining inventory to a year-end employee party.

3. *Standard Packing Boxes*

If the above recommendations are not practical, then at least require the stores to use standard plastic boxes that stack well and nest when empty. The plastic boxes need to fit into the Ranger III's coolers and freezers, and should come in two or three sizes to accommodate the various order sizes.

An extension of this concept would be a requirement of the stores to use refrigerated containers

4. *Park-owned Refrigerator/freezer Trailer or Truck*

The Park should consider acquiring a refrigerator/freezer trailer or truck that is big enough to hold everyone's cold goods. The store would then pack the trailer or truck.

If the Park can buy a second such vehicle at a discount, then a second one could be used on on Mott Island to deliver groceries to the employees' living quarters. (A vehicle on the island would have size limitations.)

C. Garbage and Recycled Materials

1) Garbage

There are two categories of garbage that come from the island:

1. General (paper, plastic bags, biological fish waste)

Amounts to about 800 cu yards per year. Hauled off island in dumpsters.

2. Demolition Waste

Salvageable items are supposed to be removed from any demolition debris. While the remaining material -- the demolition waste -- is still on the island, it should be separated into metal, cement, wood, wood with aluminum frames, and glass.

As the production of demolition waste is not routine, only general garbage is discussed below.

Comparison: Garbage Service Contract for Cumberland Island

For informational purposes, garbage service cost data from Cumberland Island National Seashore in Georgia are shown below. Following that is Isle Royale's dumpster data, both quantity and unloading costs. (My contact at Cumberland Island was Larry Pilcher, 912-882-4336, ext 221.)

Cumberland's Physical Conditions and Garbage Service Costs -

The National Seashore's operations support an island that is five miles away (two miles "as the crow flies") and has 20 employees. For garbage collecting, a garbage collecting vehicle is hauled to the island by a NS barge. (Half the island is developed and, therefore, has roads).

For August, 2005, the garbage service made five trips to the island:

- For each trip, the NS was charged a "Pull Charge" of $195.00. This charge is for the cost of serving the island, time and labor for tying their collection truck onto the barge, etc.
- The garbage service passed along the county's landfill fees, which averaged $37.49.
- The monthly rental for a 14 yard container was $63.00.
- The monthly rental for a 20 yard container was $90.00.
- Container maintenance fee was $60.00.

- A fuel surcharge was $78.00.

Total charge for August, 2005 = **$1,378.48**

Conditions for Isle Royale NP and Costs for Dumpster Unloading -

On average, there's about 70 Park employees on the island, plus volunteers and concessionaire staff. Every week the Ranger III picks up 11 dumpsters (8 from Rock Harber and 3 from Mott Island), and hauls them about 70 miles to Houghton. From there, a garbage service empties the dumpsters and hauls the garbage to a landfill.

In 2004, the total bill for the garbage service (dumpster unloading) was $5,200. Assuming the majority of that bill was for the 5 months that the island is operating, and assuming that within those 5 months there is an average of 44 dumpsters per month (11 per week x 4 weeks), then the resulting cost comes to ...

Monthly dumpster unloading cost = **$1,040.00**

Recommendation

Much of the general garbage generated on Isle Royale could be burned in a clean-burning incinerator. The Park could experiment by purchasing a single unit for the island. If the initial results are promising, more units could be phased-in at other island locations.

Description and Cost of a "SmartAsh" Incinerator -

ELASTEC–AmericanMarine quoted the current price of their "SmartAsh" model, a 55 gallon drum-style burner (see Figure 2).

With an "Oil Away" fuel injector attachment, bio-waste such as fish entrails can also be burned. This would reduce odor from on-board dumpsters, which are stowed on the bow deck when in transport on the Ranger III.

An important benefit of the "Oil Away" fuel injector is that waste oil on the island can be used as the fuel. This would cut down on the effort and cost of waste oil disposal.

Figure 2

Observing a Clean-burning Incinerator in Russia
(Courtesy of ELASTEC-AmericanMarine)

The current prices associated with the "SmartAsh" unit are summarized below.

- SmartAsh 110v Incinerator: $2,370
- "Oil Away" attachment & accessories: $1,044
- Spare parts kit: $ 383

Total = $3,797 *

* *Shipping not included*

Note:
I forwarded emission data and EPA standards to Isle Royale NP on October 31, 2005. Jeremy Pretzsch, ELASTEC's representative, provided me the information originally. If the Park has questions, Jeremy can be reached at 618-382-2525.

Estimated Number of Incinerator Units Needed for Mott Island –

Three dumpsters per week are taken off of Mott Island, each containing about 700 lbs of garbage. That means in one week there is 2,100 lbs of garbage produced, or 300 lbs per day.

For a Park employee to burn 300 lbs of garbage in an 8-hour day, the employee would have to feed 37.5 lbs of garbage into the incinerator every hour. Since the average burn rate of a unit is 50 lbs per hour, then one SmartAsh incinerator would be sufficient for Mott Island.

From a labor perspective, burning the 300 lbs of garbage at 50 lbs per hour (in one incinerator) could be completed over a 6 hour period.

Notes:
1. As I was informed, there has always been a Park employee assigned to disposing of garbage into dumpsters after collecting it. In the above scenario, the employee would load the garbage into the incinerator and burn it instead of disposing it in a dumpster.
2. It is assumed that the task of collecting and burning the garbage would be done 7 days per week.
3. Once loaded and lit, the ELASTEC represenatative told me that the incinerator does not have to be attended. Once the garbage has burned itself out, the forced air, no longer needed for combustion, will quickly cool the unit.

Estimated Number of Incinerator Units Needed for Rock Harbor –

Eight dumpsters per week are taken off of Mott Island, each containing about 700 lbs of garbage. That means in one week there is 5,600 lbs of garbage produced, or 800 lbs per day (7-day week).

For a Park employee to burn 800 lbs of garbage in an 8-hour day, the employee would have to feed 100 lbs of garbage into the incinerator every hour.

Since the average burn rate of a unit is 50 lbs per hour, then two SmartAsh incinerators would be required for Rock Harbor.

Note:
It is assumed that the bulk of the Rock Harbor garbage is produced by the concessionaire. It is also assumed that they would operate the incinerator.

Impact on Transportation to-and-from the Isle Royale –

As a transportation issue, it's hard to say what kind of benefit an incinerator might provide. For the Ranger III, it would still make its two round-trips per week to the island, with or without dumpsters. All that really can be said is that some deck space would be freed up if there are fewer dumpsters to haul.

A clear benefit may also be hard to discern for the LCM since it too usually transports more than one type of cargo. On occasion the LCM's only cargo between Mott Island and Windigo is dumpsters, but those trips can still be prompted by other Park needs. Depending on cargo pick-up needs or work requirements at a destination, it's quite possible that the LCM would simply run empty more often if it didn't have dumpsters to transport.

Potential Cost Savings –

On the other hand, there would be a benefit in reduced dumpster unloading costs in Houghton. Even if incinerators burned the bulk of the island's garbage, the Park should expect that some un-burnable garbage would end up in dumpsters, and there might be a small amount of gargabe produced at the Park office in Houghton.

Therefore, assume that three incinerators would burn at least 85% of the garbage that the Park produces. If that percentage is subtracted from the total garbage service cost of $5,200 (for 2004 – see above section), then the resulting cost of the garbage service would only be $780. That's a potential savings of $4,420 per year.

At $11,400 for three incinerators, it would take about 2-½ years to pay for the three units.

Note:
Depending on available opportunity, the LCM occasionally might take dumpsters from Windigo directly to Houghton. This could conceivably put the above figure of 85% into question. However, if it is known that there is an incinerator at Mott Island, there would be more of an incentive to arrange the LCM's transport schedules so that all – or close to all – of Windigo's dumpsters would be transported to Mott Island.

2) Recycled Materials

Isle Royale has recycle containers for glass, plastic, cans, card board, and white paper (which really is newspaper, junk mail, etc.). Once recycled materials from the island reach the Houghton dockyard

- The materials are disposed of through a recycling program at the local Michigan Tech University.

- Printer cartridges are recycled through a program called Fundingfactory.com. Credits are turned into cash, which benefits the local school district.

Recommendations

1. *Separate Demolition Waste on the Island*

   Formalize a process of separating demolition waste at the island. Separation would be easier at the point of origin rather than when it is all thrown together at the Houghton dockyard.

2. *Salvage Useable Items*

   If demolition waste is better separated at the island, then salvageable items will become more apparent. And the more a remote island salvages items, the more efficient its transportation operation become.

3. *Enable Easier Recycling and Sale of Recycled Goods*

   To encourage recycling and to make off-island transport of recycled goods easier, there should be one dumpster dedicated to each material type.

4. *Selling of Recycled Goods*

   When recycled materials arrive at Houghton, the Park could sell their recycled goods if justified by a positive cost/benefit ratio.

D. Dockyard Traffic Flow and Site Issues

Traffic flow involves anyone and anything that moves.

During the peak months of July and August, there are a lot of ship passengers congregating at the Houghton Visitor Center and dockyard. These passengers not only have to park their vehicles in crowded dockyard lot, they have luggage that needs tagging and pleasure boats that need to be loaded onto the Ranger III.

On top of that, vendor deliveries also need to be staged for loading. And if any of the Park's tug & barge vessels are in port being loaded or unloaded, the dockyard activity can get rather chaotic with anxious passengers and mobile equipment.

1) Overall Coordination

A Park maintenance worker appeared to function as a defacto receiving and shipping agent at the Houghton dockyard. From my perspective, the day-to-day responsibilities appeared to be very challenging because of an apparent mismatch between the job expectations and the position level. For example:

- When island employees send recycled goods back to the Houghton dockyard, they may have a tendency to be more careless with packaging guidelines that are requested by a maintenance worker.

- Other Park employees can inadvertantly ignore the efforts that a maintenance worker has put into staging goods to be loaded onto the Ranger III. For instance, Ranger III crew members are allowed to place their own items right in front cargo that a dockyard maintenance worker has already staged for loading. But if the dockyard employee is at a higher position, the change in status should influence improved teamwork and better communication.

Recommendation

A Dockyard Coordinator or Dockyard Manager position should be created, and it should be at a supervisory level.

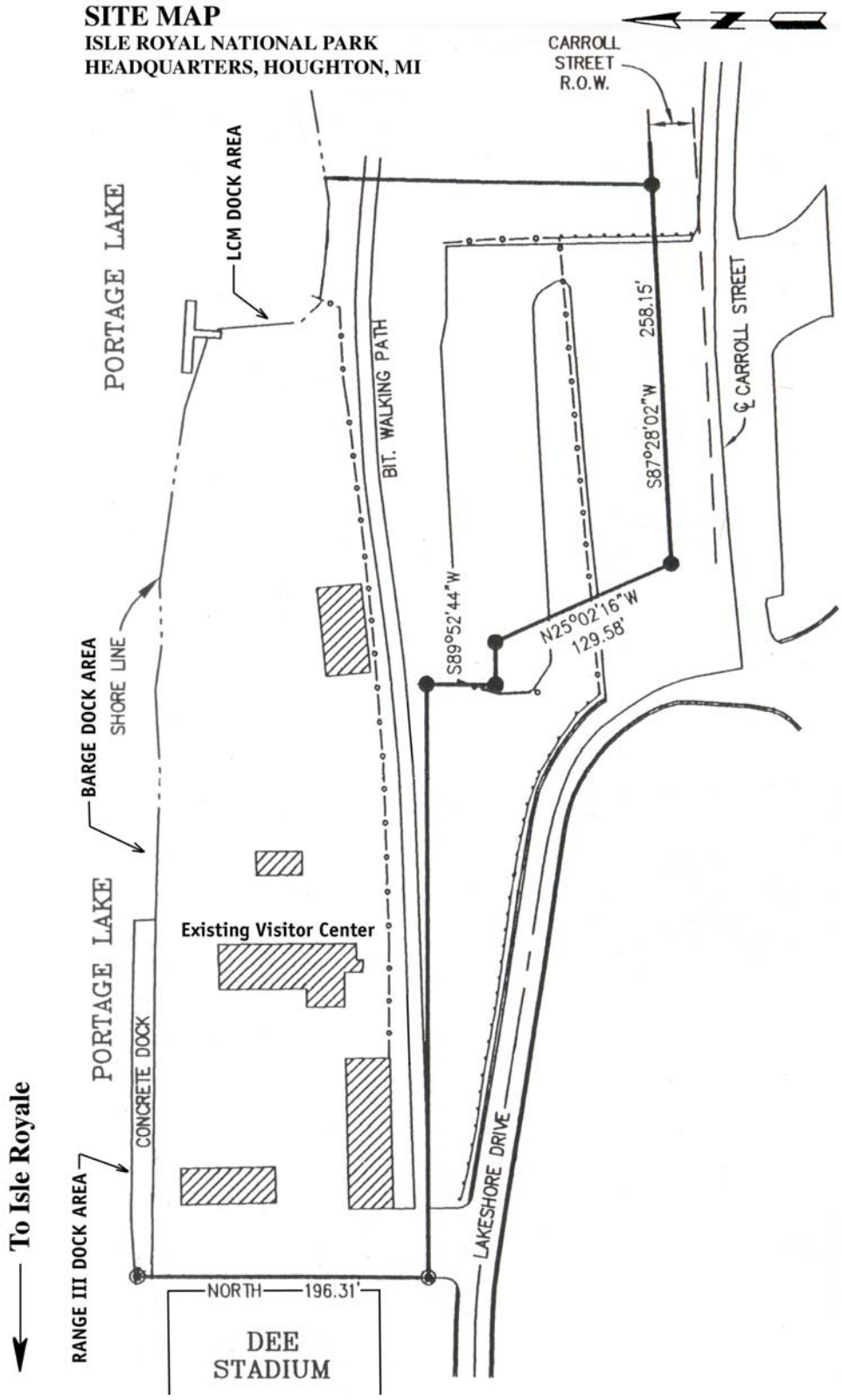

Figure 3

Site Map of Park Property in Houghton, Michigan
(Modification of Park map by Steven D. Smith.)

2) Dockyard Site Modifications

New Visitor Center / Park Office Building

The current building that houses the visitor center and Park office in Houghton will likely be torn down in the near future due to contamination problems. Since the existing building juts directly into the middle of the dockyard, its removal will be an opportunity for the Park to locate a new building away from the dockyard in order to optimize the use of the dockyard space.

In discussing the possibility of a new building in this report, only a conceptual idea can be presented since I have no information relating to available capital improvement budgets. And one of the goals of this study is to propose improvements that are "within current and anticipated budget constraints." However, standard per-square-foot costs for a new office can be easily obtained.

Location for the New Visitor Center / Park Office -

One concept is to locate the new building near Carroll Street in the southeast corner of the Park's property. A new building at that location will help keep passengers away from the busy dockyard as they start to arrive at Park headquarters on Ranger III departure mornings. This strategy should enhance safety and efficiency while the Ranger III is being loaded with supplies and baggage.

The southeast corner of the property currently has upper and mid-level parking lots for Ranger III passengers. ("Mid-level" is in relation to the passenger parking area on the dockyard, which is at the lowest level.) The new building could be built on the location of the upper lot and could cantilever over the the mid-level lot, thereby retaining the parking stalls in the mid-level lot location (see Figure 4).

The net number of parking stalls will hopefully remain similar since the removal of the existing building will open up space in the dockyard area. Any parking spaces in the dockyard area could be considered overflow parking and could be situated away from vessel loading/unloading areas.

Figure 4

Concept for New Park Visitor Center/Office

Windows on the elevated floors would provide a view over Portage Lake. (Modification of Park photo by Steven D. Smith.)

Expanded Dockyard Space -

If a new building is indeed built away from the dockyard, then more dockyard space will be made available. Traffic flow patterns can be designed within the expanded space that optimize the efficiency of all dockyard operations. One example of how an expanded dockyard can be optimized relates to the fueling operation of the Ranger III.

Maritime Security (MARSEC) regulations require that the dockyard entry gate be closed and locked while the the Ranger III is being fueled. But with the old visitor center torn down, a new fence configuration near the Ranger III's dock space could be devised that would allow the delivery of goods to the dockyard while the Ranger III is being fueled. An interesting question would be if there are any rolling fences that meet MARSEC regulations.

Docking Facilities for the LCM and Work Barge

There are three issues with the docking facilities for the LCM and working barge.

The first issue is with the existing dock locations and how they conflict with parking for Ranger III passengers. However, any parking issues can be addressed with the new location for the visitor center (see above).

The two other issues and their associated recommendations are described below.

1. *Dip at the End of the LCM Ramp -*

   There's a bad dip right where the LCM drops its front gate. This prohibits certain vehicles from driving onto the LCM with a load of cargo. Any goods that can't be loaded mechanically must be unloaded by hand and carried manually onto the LCM. This is highly inefficient and labor intensive.

   Construction crews from the island could easily build a water-level concrete approach for the LCM at minimal cost.

2. *Dock Structure for the Working Barge -*

   The shoreline where the barge ties up does not have a concrete-capped sheet pile wall. This is needed to provide a hard working surface alongside the barge.

   One day I watched a dock crew load sheetrock. For some reason they couldn't use the barge crane and, instead, relied on the delivery truck's boom. But it was difficult because the truck had to be set back to where there was pavement. Since the boom's reach was limited, Joe Bergan (the barge

captain) and John Line had to maneuver the sheetrock into final place with a forklift jack. This was an extra step requiring extra labor.

Delivery vehicles (especially those with self-unloading capability) clearly need to be able pull up alongside the barge. Granted, concrete-capped sheetpile is expensive and likely can't be constructed by Park staff. But if the Park builds a new visitor center/office building, then that might be a good time to include funding for dockyard modifications like concrete-capped sheetpiling.

Miscellaneous Dockyard Modifications

1. If it's raining on mornings thta the Ranger III departs, the passengers crowd into the existing visitor center, which is quite small. If construction of a new visitor center/office building is many years away, then it might be in the Park's interest to construct an economical (e.g., metal-clad) passenger pavillion with bathrooms.

A pavillion would alleviate crowding in the current visitor center, and passengers wouldn't be as tempted to wait to come on board the Ranger III to use the facilities and fill its sewage tanks. (Although I didn't hear if a maxed out sewage tank has ever been a problem, the tank capacity must last for the entire two-day trip.)

2. The most hectic days on the dockyard are when the Ranger III comes in with up to 100 passengers or more. It can get especially hectic on the east side of the Visitor Center where all the baggage carts brought.

a) In order to retrieve their own luggage from the baggage carts, the passengers remove the cart side-rails by themselves and leave them laying around haphazardly.
b) The carts can block parked cars from leaving.
c) The parking lot exit area gets crowded with parked cars and disembarked passengers trying to load their kayaks and gear onto their vehicles.

As mentioned earlier, a relocated visitor center/office will help alleviate all types of dockyard congestion, including that caused by disembarked passengers.

As for the baggage carts, it would help to have carts with fold-down side rails.

3) Possible New Site for Park Headquarters

A study by U.P. Engineers & Architects (February 2005) looks at relocating the Park Headquarters to the site of the old Quincy Smelter. The smelter site is directly across Portage Lake from the current headquarters.

Since that study has already been done, the subject of a new headquarters on the smelter site will not be addressed in great detail here. However, some advantages of such a move are worth mentioning.

One idea I heard is that the smelter site might be large enough to accommodate a variety of governmental agencies. One site that housed all agencies would be very convenient for local citizens as well as tourists. Plus, a multi-agency partnership might increase chances of funding for such a facility.

The agencies that could be included in the partnership might include:

Isle Royale National Park
Keewinaw National Historical Park
Chamber of Commerce
Keewinaw Tourist Council
Michigan State Parks (DNR)
Ottawa National Forest
Keewinaw Land Conservation

A multi-agency facility would be, so to speak, a “one stop shop” for information, permits, tour reservations, air and boat passenger reservations, camping permits, etc.

Regading maritime operations, the old smelter site is likely big enough to accommodate a maintenance dock and a dock for visiting cruise ships.

IV. OPERATIONS OF THE RANGER III

A. Background Information and Data

General

A photo of the Ranger III is on the cover of this report. The ship was custom-built in 1957 to serve Isle Royale.

The Ranger III's primary mission is logistical support for the Park. In other words: to supply the government with the necessary items to keep Isle Royale functional. Its secondary mission is commercial transportation of freight and passengers. The concessionaire that runs Rock Harbor Lodge (Isle Royale Resorts) pays $8.40 / hundred weight (100 lbs) for freight.

In contrast to its scheduled summer routine, the Ranger III's spring and fall runs are varied. In April and May, the Ranger III transports Park personnel and supplies out to the island to gear up for the visitor season. Then through most of September and October, the Ranger III is used for special projects and for off-island transport during winter shut down.

When the Ranger III is in port and ready to take on a load, up to 25 tons of cargo needs to be staged and ready to go.

For total cargo transported in a season, the average tonnage transported by the Ranger III for the five years from 2000 to 2004 is as follows:

Average tons transported for the Park =	1,344
Average tons transported for Rock Harbor Lodge =	114
Total =	1,458

Regarding any deficiencies in its transport capabilities, the Ranger III captain, Bill Hanrahan, said the ship could use more refrigeration storage capacity.

Draft Statistics and Requirements

The Ranger III requires a 15’ depth at any harbor. Its average draft is about 10’-6” (11’-6” on one end), but low lake levels, wind drawdowns and sieches can have a pronounced affect on reducing clearance.

Engines

The Ranger III's current engines went into service in the spring of 1999 and had 4300

hours as of October, 2005. At 10,000 hours (in the year 2012, approximately), the engines will require a full tear-down inspection. The estimated is $6,000 to $7,000 per engine, or an estimae total of $14,000.

A lot of engines like the Ranger III's have been built, so parts availability should never be a problem.

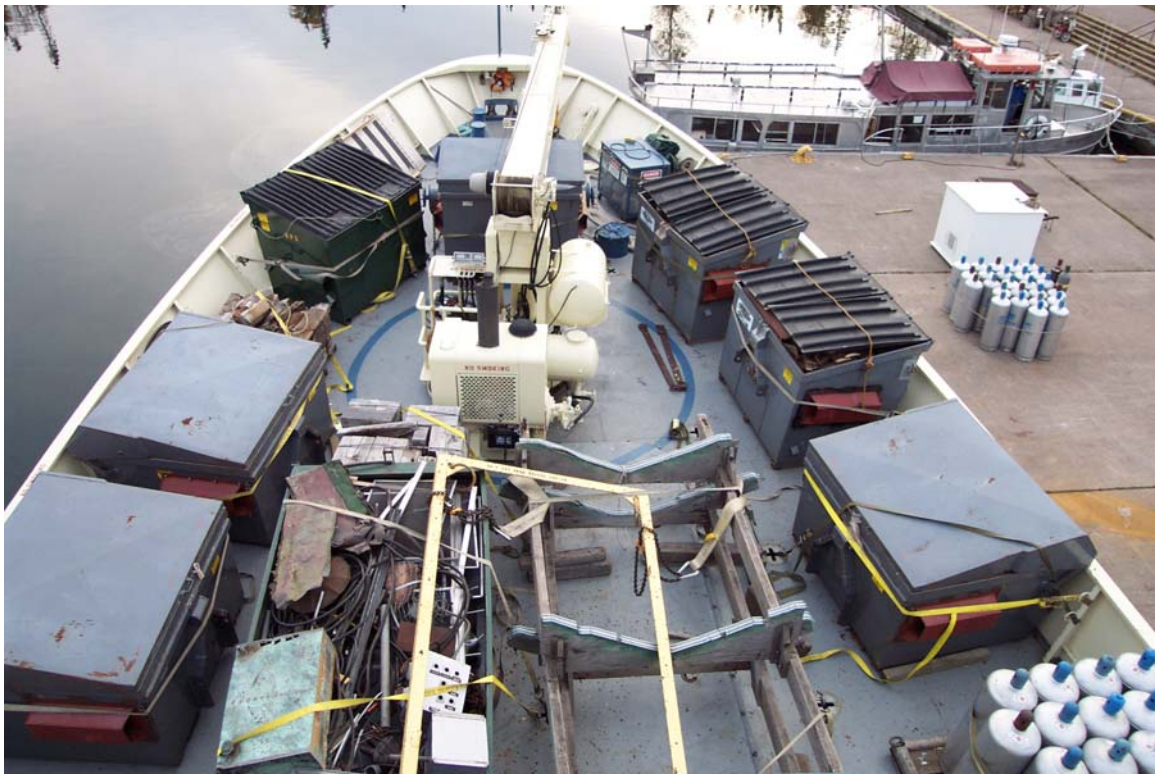

Figure 5

Cargo on the Bow of the Ranger III

(A cargo hold below the bow deck can be accessed either through a deck hatch or through doors on each side of the hull.)

On-board Fuel

The Ranger III's fuel capacity (#2 diesel) is 10,280 gallons. Of the quantity on board, anywhere from 4,000 to 7,000 gallons might be cargo. Diesel is delivered to the island on about one third of all trips in a season, mostly for Park use.

On every trip, the Ranger III burns 520 gallons of diesel fuel.

Fuel Delivery

Diesel Tank Capacities on Island (in gallons):

Windigo (Park) -	20,000	
Rock Harbor (Park) -	20,000	
Mott Island -	20,000	
	10,000	(second tank)
Rock Harbor (Concessions) -	10,000	
Malone / Amygdaloid (Park ranger stations) -	2,000	each

Total Diesel Fuel Delivered (gallons):

2004	Park -	67,500
	Concessions -	8,000
2003	Park -	73,000
	Concessions -	8,000
2002	Park -	77,700
	Concessions -	9,000
2001	Park -	89,000
	Concessions -	4,000
2000	Park-	76,650
	Concessions -	10,381
AVERAGE	Park -	76,770
	Concessions -	7,880
	TOTAL =	84,650 gallons (305.4 tons)

Figure 6 - Tanker Delivering Diesel Fuel to the Ranger III, Isle Royale NP Dockyard in Houghton, Michigan

Figure 7 - Off-loading Diesel Fuel at Windigo

B. Regulatory Compliance

Inspection Issues

Since the Ranger III provides service to the lodge at Rock Harbor, the Ranger III falls under commercial inspection requirements. With its weight exceeding 100 gross tons, the Ranger III falls under the Coast Guard category of an "H" boat. H boats have more stringent inspection requirements.

A big question in looking at any alternative to the Ranger III:

> If the Ranger III did not partake in any commercial operations and became a non-inspected boat, then could it continue to transport family and friends of Park employees?

The Ranger III gets an annual hull integrity inspection (including load line).

The American Bureau of Shipping (ABS) performs annual safety-critical mechanical inspections. The inspections are required, and cost from $4000 - $6000 per year ($4,400 in FY ’05).

Dry Docking -

> The Ranger III gets dry docked every five years at a cost of $250,000. Both U.S. Coast Guard and ABS inspections are performed during dry docking.
>
> At most, a one-year extension in the the dry docking schedule might be a remote possibility. But the request and authorization would take a long time because it all must go through U.S. Coast Guard Headquarters (the Ranger III is a sub "H" PAX vessel). The process would involve underwater inspections with no gaurantee of success. According to the Ranger III captain, a USCG inspector had said it was unlikely a 47 year-old pax vessel would get the extension even if the boat does operate in fresh water.
>
> So, assuming the 5-year dry docking expense of $250,000 is a given, then that amount will really add up over the remaining life of the Ranger III. Figure 8 shows what the dry docking expenses plus all annual costs come to over 30 years at 4.5% interest. The total expenditure will be $7.6 million dollars assuming the dry docking expense and the Ranger III's budget stay the same. Both are be unlikely, but the latter is especially unlikely in this age of fast-rising fuel costs.
>
> *Notes:*
> 1. *In Figure 8, the annual operating cost comes from the projected FY budget for 2005, minus projected revenues.*
> 2. *The Ranger III captain said that a 30-year analysis period was reasonable.*

Life Cycle Cost Analysis

Planning Estimate

Ranger III

Description ---->	YR		Alternate #1 Current Operation (2006-2035)		Alternate #2		Alternate #3		Alternate #4
First Year Operating Cost			$398,000						
Years of Analysis			30		30		30		30
Interest %			4.50%		4.50%		4.50%		4.50%
2006									
2007	1	A	$398,000		$0		$0		$0
2008	2	C	$648,000		$0		$0		$0
2009	3	A	$398,000		$0		$0		$0
2010	4	A	$398,000		$0		$0		$0
2011	5	A	$398,000		$0		$0		$0
2012	6	A	$398,000		$0		$0		$0
2013	7	C	$648,000		$0		$0		$0
2014	8	A	$398,000		$0		$0		$0
2015	9	A	$398,000		$0		$0		$0
2016	10	A	$398,000		$0		$0		$0
2017	11	A	$398,000		$0		$0		$0
2018	12	C	$648,000		$0		$0		$0
2019	13	A	$398,000		$0		$0		$0
2020	14	A	$398,000		$0		$0		$0
2021	15	A	$398,000		$0		$0		$0
2022	16	A	$398,000		$0		$0		$0
2023	17	C	$648,000		$0		$0		$0
2024	18	A	$398,000		$0		$0		$0
2025	19	A	$398,000		$0		$0		$0
2026	20	A	$398,000		$0		$0		$0
2027	21	A	$398,000		$0		$0		$0
2028	22	C	$648,000		$0		$0		$0
2029	23	A	$398,000		$0		$0		$0
2030	24	A	$398,000		$0		$0		$0
2031	25	A	$398,000		$0		$0		$0
2032	26	A	$398,000		$0		$0		$0
2033	27	C	$648,000		$0		$0		$0
2034	28	A	$398,000		$0		$0		$0
2035	29	A	$398,000		$0		$0		$0
	30		$0		$0		$0		$0
	31		$0		$0		$0		$0
	32		$0		$0		$0		$0
	33		$0		$0		$0		$0
	34		$0		$0		$0		$0
	35		$0		$0		$0		$0
	36		$0		$0		$0		$0
	37		$0		$0		$0		$0
	38		$0		$0		$0		$0
	39		$0		$0		$0		$0
	40		$0		$0		$0		$0
	41		$0		$0		$0		$0
	42		$0		$0		$0		$0
	43		$0		$0		$0		$0
	44		$0		$0		$0		$0
	45		$0		$0		$0		$0
	46		$0		$0		$0		$0
	47		$0		$0		$0		$0
	48		$0		$0		$0		$0
	49		$0		$0		$0		$0
Total Cost (Present Worth)			$7,624,159		$0		$0		$0
Annual Cost (Present Worth)			$468,059		$1,000,000		$1,000,000		$1,000,000
% Above Low Option			100%		214%		214%		214%

Notes:

Improvements		Cost
A	Annual Operating Cost	$398,000
B	Dry Docking Expense	$250,000
C	Operating + Dry Docking (A+B)	$648,000
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		

Data Furnished By: Jack Salmela
Completed By: Jack Salmela
Date: 9-Sep-05

Figure 8 - 30-year Life Cycle Cost for the Ranger III

Security & Environmental Compliance

Not only for the Ranger III, but the Park's entire transportation system operates under a myriad of security and environmental regulations. These regulations are described below to provide an understanding of the scope and breadth of the regulations. Compliance has a cost in terms of carrying out the regulations and in training Park personnel.

Maritime Transportation Security Act -

Security levels (MARSEC levels I, II, or III) are determined by the Coast Guard's Capt.-of-the-Port (COTP). Houghton and Isle Royale are in the western Lake Superior COTP zone.

The act affects both vessels and facilities, and as with any security or environmental compliance, there are training costs that the Park incurs.

The Ranger III is in a unique regulatory category. Because it is an H boat, it falls under the act, but since it carries less than 150 passengers, it can go to facilities that are not regulated by the Act.

OPA 90 -

OPA 90 regulations pertain to maritime petroleum hauling. These regulations are administered by the Coast Guard and were put into law as a result of the Exon Valdez oil spill in Alaska in 1989.

Required equipment that is compliant with OPA 90 rules include:

- 3 - 400' containment booms;
- 3 diesel-powered reels;
- Skimmers;
- Buoys and accessories.

Every year a spill reel needs to be deployed (on the Valdez, a containment boom was found to be rotted at the time they needed it). Every three years, all equipment needs to be deployed, including the two skimmers (there's one at each end of the island).

A "Haz Mat" team of 25 does the deployment.

The seven permanent crew members on the Ranger III are all trained at the "Haz Tech" level. Training is one week, and costs $2,000 in tuition for each trainee.

Truck drivers who deliver fuel to the Houghton dockyard are also OPA 90 certified. This adds cost to the fuel and limits who can deliver it.

Compliance with OPA 90 regulations also has indirect costs:

- Loading propane at the Lily Pond instead of the Houghton dockyard;

- Signs;
- Written plans of action;
- New radios;
- Patrolling 4 times per hour.

Long-term Cosequences of OPA 90

The Park has an important, long-term issue that must be dealt with before 2015. In that year, OPA 90 regulations (see notes, below) will require that the Ranger III stop hauling commercial diesel in 2015. This means that the Ranger III won't be able to provide fuel for the Rock Harbor Lodge.

There is not only time to challenge this regulation, but grounds for a challenge seem legitimate: for the diesel fuel carried on board the Ranger III, what's the difference if it is called bunker oil for consumption or oil for transport?

There is an alternative to an outright challenge. Potable water on the Ranger III could be stored in a different tank, and the existing potable water tank, which is triple hulled, could be converted to a diesel oil tank.

Notes:
See Oil Pollution Act of 1990:
46 USC 703a (c) (2)
- restrictions on commercial diesel oil transport after January 1, 2015, unless cargo tank is double hulled.
33 CFR 157.10 (d)
- phasing out of single-hulled diesel oil cargo tanks.

C. Passengers

1) Points of Access to Isle Royale

During the course of my study, much discussion with Park personnel centered around the Ranger III's single point of access to Isle Royale. Basically, the Ranger III serves only the northeast end of the Park. In fact, 100% of all Michigan-side passengers have no choice but to access the Park through Rock Harbor.

Recommendation: Experimental Runs to Windigo

As a visitor-dispersion experiment for the island, modify the Ranger III's schedule for one pilot season. On every fourth trip, have the Ranger III go to Windigo first and then on to Mott Island/Rock Harbor. (In the slower part of the season, it could be every 1 in 6 trips.)

Every time the Ranger III arrives at Windigo, it would pick up passengers only. No passengers would be allowed to disembark.

With this proposal, end-to-end traverses of the island would be easier to plan for those visitors wanting to do so. Longer-distance backpackers could come in at Rock Harbor, hike to the southwest end of the island, and in so doing, get away from the higher-used northeast end.

Once the backpackers return to Rock Harbor on the Ranger III, they could return to Michigan by the way they came, either the Ranger III or the Queen IV.

Note:
The Park would have to make a policy regarding passengers who arrived at Windigo from Minnesota. Allowing them to board the Ranger III at Windigo has the potential of taking away business from the Voyageur.

There would also be a couple side benefits to this proposal. For those weeks that the Ranger III goes to Windigo:

- Employees' groceries, mail, and supplies would arrive faster.
- Garbage would be picked up faster.

Recommendation: Experimental Drop-off Point for Kayakers

Implement one pilot season in which kayakers are allowed to disembark at Mott Island. This would provide them easier access to such attractions as the Edison Fishery and the Rock Harbor Lighthouse.

2) Ticket Reservations

In light of the Park's desire for a business approach to this study, then a recommendation to maximize ticket sales for the Ranger III is obvious. And I don't mean "maximize" in terms of trying to recruit more prospective customers. That could have the appearance of promoting competition with the concessionaires. I recommend that ticket sales should be maximized with all potential customers who make their initial inquiry at the Park's Visitor Center in Houghton, Michigan. This can be done in a number of ways:

1. When calling the Park, customers should get a person. Acquire an 800# and hire a couple temporary employees to take calls, at least during the peak season of July and August.

2. Separate the reservation and the information numbers so that the reservation processing is efficient. By doing so, detailed Park information can be given to callers without interfering with other customers calling for reservations only.

3. Offer discounted tickets in the slower months. This might offset the "sticker shock" to potential customers unwilling to pay the higher ticket price (one-way for an adult is $50).

4. Never lock the Visitor Center during declared business hours. If undisturbed staff meetings are critical, then overtime pay would be justified to hold the meetings before or after business hours.

D. Analysis and Discussion about Operating Costs

Cost Analysis Validity

I found no meaningful method of cost centering any of the Ranger III's transport functions. The Ranger III simply carries too many different items. Analyzing an alternate means of transport for any one particluar item wouldn't tell much if the alternative didn't produce a savings in the Ranger III's operating budget. For a savings to occur, there would have to be a clear change in the ship's operating routine or a reduction of crew members.

For example, if the Park contracted out its garbage hauling and the Ranger III discontinued transporting dumpsters, would that affect a change in the number of runs the Ranger III would make or in ts crew size?

Annual Budget vs. Tonnage & Passengers Transported

On the other hand, it's worth showing what the Ranger III's annual operating costs are and what it transports in a typical year. This is for informational purposes only, and no conclusion is provided.

For FY 2005, the Ranger III's budget was ...	$561,948
Minus it's projected revenue for FY 2005 ...	- $164,000
Net Operating Budget =	**$397,948**

Average Tonnage (cargo & garbage) ...	1,458 tons
Average Cargo Diesel fuel ...	+ 305 tons
Total Tonnage Transported =	**1,763 tons**

I then added up the total number of passengers transported in 2004.

Total Passengers Transported = 4,602

Note:
The passenger total is a sum of the data from these four categories:
- Full Fare Visitor
- Reduced Fare Visitor
- Researcher or Non-Recreation Visitor
- Non-Reportable Visitor

Assuming an average weight of 200 lbs per passenger (includes an allowance for gear and luggage) ...

Total Human Cargo = 460 tons

Grand total of all cargo ...	**1,763 + 460 =**	**2,223 tons**
	Cost per Ton Transported =	**$179 per ton**

Please keep in mind that any comparison of the above result to the $/ton of other shipping modes would not be comparing "apples to apples." For instance, freighters on Lake Superior ususally carry one exclusive item in bulk, like taconite pellets or coal. So any comparison would be, as one Park employee pointed out, like comparing "a bus with a dump truck." The inefficiencies of a taking small quantities of diverse items will no doubt be more expensive.

Cost per Trip

Another perspective for the Ranger III's cost is looking at the dollars per trip. Again, the following result is for informational purposes only, and no conclusion is provided.

Net Operating Budget =	$397,948
Aver. Round Trips per Year =	45
Cost per Trip =	**$8,843**

Comparison to the Motor Vessel Fort Jefferson

Everglades National Park supports the historic island fort, Dry Tortugis, with a boat called the Motor Vessel Fort Jefferson (see Figure 9).

The Fort Jefferson is 105 feet long and -- as indicated by their former Chief Ranger, Bill Wright -- it is listed at 200 tons. It operates year round with a crew of three, two of whom are permanent employees. The boat does not take passengers, but at times does transport illegal aliens at the request of the US Coast Guard. Its one-way travel distance out to the island is 67 miles, similar to the distance the Ranger III travels to Isle Royale.

The annual operating budget of the Fort Jefferson is **$360,000**. Besides Park operations, the boat supports an island staff of **13** permanenet employees, numerous volunteers, transient staff, and the US Coast Guard when they are on site.

Although Isle Royale's Ranger III does not operate year round, it supports a large island that had **71** employees and season-long volunteers in 2005 (that does not include concession employees, short-term volunteers, etc.). And the Ranger III did so with a net operating budget of close to **$400,000**. From that perspective, I think the Ranger III is quite cost effective.

However, every five years the Ranger III gets dry docked at an expense of $250,000. In those years, the operating budget is about **$650,000**.

Figure 9

Motor Vessel Fort Jefferson - Operated by Everglades National Park, Florida (Courtesy of Everglades NP)

Conclusion

A judgement of the Ranger III's function and efficiency comes down to this question:

> What is reasonable?

As a percentage of the Park's total $3.5 million base (ONPS) budget, the Ranger III's net operating budget of about $400,000 (see above) is only 11.4%. Considering what the Ranger III does in supporting the island and its concessionaires, then $400,000 appears reasonable.

For this 11.4%, the park transports all diesel fuel, employees, researchers, research equipment (e.g., fish tanks), a large number of Park visitors, frozen foods, refrigerated foods, hazardous materials, heavy-lift cargo, garbage, dry freight, propane, ... you see my point.

Of course, the expense of dry docking every fifth year certainly can't be overlooked. In those years, the Ranger III's budget increases to 18.6% of total Park base budget.

Plus, the above calculations have been based on *projections* for the 2005 budget. As we now know, fuel prices have sky-rocketed in late 2005.

> For the four years from 2001 to 2004, the Park paid an average price for diesel fuel of $1.20 per gallon, with the prices for all four years being within a range of $0.22. In 2005, however, the average price paid was $1.94, which is an increase of $0.74 from the average for 2001 to 2004. This type of volatility hangs like a dark cloud over any entity that relies on a lot of fuel useage in its day-to-day function.

On the other hand, there needs to be a statement about the intangible value not reflected in any budget numbers. In operating its own boat, the Park has a huge degree of flexibility and freedom to dispatch the Ranger III where and when needed. And in so doing, there are no contracting costs to worry about, no insurance costs, no worry about being a prisoner to another operator's time restrictions and availability, and no hassles about taking Park employees as passengers.

And on top of all that, it's worth emphazing that the Ranger III was designed to support Isle Royale. Since it operates in fresh water and its engines are new, the Ranger III should have many years of life remaining.

E. An Alternative Scenario to the Ranger III

After having read the last section, if anyone is *not* convinced that the Ranger III's "function and efficiency" is "reasonable," then another approach is to look at the cost of functional replacements.

The following is a list of vessel purchases that would be required to continue the passenger transport and logistical support for Isle Royale in the case that the Ranger III was taken out of service and not replaced in-kind.

- Passenger transport vessel - $ 3,500,000

  An Austal 26, a high-Speed Catamaran (see Figure 10), was used as the price model. It would have to be configured to transport light-weight cargo and refrigerated food and beverages (that would be in addition to on-board concessions). Roll-on / roll-off cargo handling capability would be essential.

- Second, larger tug for crossing lake with the barges - $ 500,000

- Purchase of self-propelled barge with heavy-lift crane - $ 1,600,000

  The "Miss Jamie Lynn" was used as the price model. (see Figure 11). This barge is, in fact, for sale from Donkersloot & Sons in New Buffalo, Michigan (616-469-3000). The price listed is an appraised cost.

TOTAL OF ABOVE PURCHASE COSTS = $ 5,600,000

Notes:

1. Annual operating budget for the passenger transport vessel would depend on crew size (more than 5 might be needed). The Circle Line in New York operates an Austal 26, and they may be willing to discuss their annual budget (212-809-0808). However, I did leave a phone inquiry, but the call was not returned.

2. The above scenario depends on a second tug & barge crew. Therefore, the current tug & barge annual budget would have to approximately double

3. Not listed are a number of operating costs such as dry docking charges, training budgets, environmental & security compliance costs, etc.

4. Although a different purchase estimate for a tug appears in a letter in Appendix A, the above estimate of $500,000 was selected after consultation with Joe Bergan, the Park's tug & barge captain.

PRINCIPAL DIMENSIONS		
Length Overall	86ft 04in	26.32m
Length Waterline	78ft 09in	24.00m
Beam (Moulded)	26ft 03in	8.00m
Depth (Moulded)	9ft 02in	2.80m
Draft (Maximum)	5ft 09in	1.75m

PAYLOAD & CAPACITIES		
Passengers	215	
Crew	5	
Fuel (Ship's Fuel)	1,900 USG	7,200 liters

PROPULSION	
Main Engines	2 x Detriot Diesel 16V2000 1285 HP @ 2110 RPM
Gearboxes	2 x Twin Disc MG 6619 (2.44:1 Reduction)
Waterjets	Twin Propellers

PERFORMANCE	
Speed (100% MCR)	27.7 knots

SURVEY
US Coast Guard 46 CFR Subchapter K Limited Coastal

Figure 10

High-speed Ferry with a Catamaran Hull
(Courtesy of Austal, USA)

Figure 11

A type of self-propelled barge with crane that can be used to support Isle Royale. (Courtesy of Donkersloot & Sons, Marine Development, Co.)

F. Miscellaneous Observations & Recommendations

Communications: Other Operators / Transportation Authorities

Within the Great Lakes region, there are agencies and private boat operators who are familiar with operational costs associated with the logistical support of an island. In fact, a consulting firm, The Corradino Group, Inc., did a ferry service study for the Beaver Island Transportation Authority (Beaver Island is located in northern Lake Michigan). My contact at the Authority was Barb Swartzfisher, 231-448-3049.

For this study, I had particular interest in shipping cost data for tonnage of cargo. Since I didn't find that data in the Corradino study, I asked the Authority and the Corradino Group if I could get access to that data. They were reluctant to release such information because it was proprietary in nature (the operator is the private Beaver Island Boat Company).

However, if Isle Royale staff follows up on my initial contacts and fosters positive, on-going relationships, then the sharing of certain information may become possible. Without ever having met me, both the Authority and the Corradino group were willing to cooperate for my study to the degree they felt comfortable. The degree of cooperation may indeed increase if a personal communication network is established.

Local & Regional Value of the Ranger III

Economic -

> An important conclusion in the Corradino study was the impact that a ferry operation has on the local economy. The ferry to Beaver Island leaves from Charlevoix, Michigan. It was reported that the direct economic impact on the Charlevoix area is nearly $2 million. No doubt the Range III also has a positive economic impact on the Houghton-Hancock area, as would the Queen in the Copper Harbor area.

Intrinsic -

> As an outsider coming in to review the Park's transportation system, it didn't take long to see the Ranger III's intrinsic value to the combined community of Houghton-Hancock. Being from Duluth, Minnesota, I know that special features like a landmark can become symbolic of a community. When you think of St. Louis, Missouri, for example, what's the first thing that comes to your mind? The Gateway Arch? In a similar way, the Ranger III certainly seems to be symbolic of Houghton-Hancock. Why else would high-school graduating classes choose to have their class photos taken on the Ranger III?

Capitalize on Region-wide Intrinsic Value -

As a resident of a port city, I know that when a unique ship makes a rare visit, the event gets a lot of attention. Local television newscasts and newspapers often make the special port-of-call their lead story. Large numbers of city residents travel down to the harbor to tour the ship and wish they could travel on it.

If the Park and the Rock Harbor Lodge are interested in increasing visitors in the slower month of June, then it may be possible for the Ranger III to capitalize on this attention.

In the spirit of brain storming ideas that are "outside the box," the Park and the Lodge could work in conjunction and advertise a special visit that the Ranger III would make to a port city. The Ranger III could pick up passengers for a three-day excursion to Isle Royale:

- One day enroute from the port city.
- One day on the island (two nights at the lodge).
- One day return.

Possible ports-of-call might be Marquette, Michigan; Washburn, Wisconsin; and Two Harbors, Minnesota. Planning and logistics would likely limit such a venture to only one port a year at the most. But in the long term, that could be for the be best since the novelty in any one port community would be less likely to wear out.

The advantage of port towns like Washburn and Two Harbors is that they receive a large influx of tourists from metro centers like Minneapolis-St. Paul. These tourists are a potential source of first-time passengers for the Ranger III.

The advantage of Marquette and Two Harbors is that – in and of themselves – they are either a large city or close to one.

Need for Backup Personnel

Park staff should make sure that the Ranger III's operations could continue uninterrupted in the event the captain had to be absent. Under the captain's supervision, the first officer should practice docking the Ranger III from time to time.

In addition, back-up personnel should also be considered for the first officer himself, and also for the oiler (the Chief Engineer's assistant).

The Possibility of an Alternative Energy Source

Due to the escalating prices of diesel fuel and the implications of OPA 90 regulations in shipping the diesel fuel, I made an attempt to look into wave-genrerated electricity as an alternative energy source.

I contacted a David Langston at Wavegen in Iverness, Scotland. He asked me for details about the wave environment around Isle Royale. Gene Clark, a Coastal Engineer for the Sea Grant Institute at the University of Wisconsin in Superior (715-394-8472), was able to provide that information, which I then forwarded to Mr. Langston.

I have yet to hear back from Mr. Langston by the time this report had to be written. Therefore, if the staff at Isle Royale are interested in the potential of wave-generated electricity, then I suggest an attempt at follow-up communications with Mr. Langston: (david.langston@wavegen.com).

V. TUG & BARGE OPERATIONS

A. Background Information and Data

The tug & barge operation is staffed by a captain and an ordinary seaman. They operate four vessels on an "as needed" basis":

1. LCM (self-propelled landing craft barge)
2. Tug boat
3. Work barge
4. Gasoline barge

In general, the tug & barge operation hauls building materials, gasoline, and construction debris. Septic tank sludge from Mott Island and Windigo are also hauled away about once a year.

Note: Rock Harbor has its own sewage treatment system.

All four vessels in the tug & barge operation have a draft – when loaded – of about 5'.

LCM

The LCM was built in 1958 and acquired by the Park in 1989. Figure 12 shows the LCM before it was re-furbished with a larger pilot house on the stern.

Its dual 325 horsepower engines are three years old. They are re-buildable and should last 20 years.

When loaded, the LCM's has a draft of 5.5' and makes 9 knots.

168 square feet of bottom shell plating on the LCM needs replacing. The expected cost would be: $25,000 if done at a shipyard
$15,000 if done locally

Tug – "Shelter Bay"

The Shelter Bay (see Figure 13) was made in 1946 and acquired by the Park in 1998. It's in excellent condition.

The tug has one 325 horsepower engine.

Although the tug is ideal for maneuvering around the island's harbors and coves, it's too small to cross Lake Superior efficiently.

Figure 12 - The Park's LCM (Self-propelled Landing Craft-style Barge)

Figure 13 - The Park's Tug Boat, "Shelter Bay"

Work Barge

The work barge (see Figure 14) was built in 1954 and acquired by the Park in 1961. It is propelled by the tug.

On its deck there is a crane, crew living quarters, and work shop space. Adjustable storage bays can be erected on the deck. A spud (similar to an "H" pile) allows for anchoring at construction sites.

Unlike the other park-owned vessels, the life of the work barge is questionable. In the latter part of the 2005 season, the barge's hull started to leak and had to be patched. The tug & barge captain, Joe Bergan, said that the work barge should be hauled out for maintenance. This would provide a chance to inspect the hull for other potential leaks. Plus, a needed coat of paint could be applied to the barge's underside.

Figure 14 - The Park's Work Barge

Gasoline Barge - "Greenstone II"

The Greenstone II (see Figure 15) was built and acquired by the Park in 2004. The purchase price was $497,700. Like the work barge, it is also propelled by the tug.

Although Greenstone II is capable of hauling most any petroleum-based fuel, the Park uses it to transport gasoline and aviation fuel ("av gas"). It has five cargo tanks for fuel:

2 @ 7,800 gallons
2 @ 7,600
1 @ 3,400

Island Tank Capacities –

The Greenstone II delivers to a number of island depots. The locations and their capacities are as follows:

Mott Island		25,000 gallons
Rock Harbor		20,000
Amygdaloid		2,000
Malone		2,000
Windigo		
	Concessions	10,000
	Park	6,000
	Park (aviation gas)	6,000

Quantities Hauled -

In fiscal year 2004, a total of 66,000 gallons of gasoline was transported to the island. That quantity was distributed to the various island entities as shown below:

Isle Royale Resorts	35,336 gallons
National Park	25,661
National Park (av-gas)	1,000
Isle Royale Recr.'n Assoc.'n	4,003

In fiscal year 2003, a total of 30,500 gallons of gasoline was delivered to the island, broken down as follows:

Isle Royale Resorts	25,500 gallons
National Park	5,000

Notes:
1. In 2003 there was no operating gasoline barge. Therefore, the large quantity of 66,000 in FY '04 was needed to fill up tanks on the island that were

virtually empty.
2. There was no air service in 2003, so no av-gas quantity is listed.

Dry Docking -

The Greenstone II's first dry-docking requirement is in 2014. After that, dry-docking will be required every 5 years. The dry docking will be an opportunity to perform needed repairs, do painting and other maintenance, but all at an additional cost.

Dry docking expenses for the previous gas barge, the Greenstone I, were as follows:

1998 - $32,779
2003 - $29,469

Note: The above prices do not reflect the cost of travel.

Figure 15 - Launch of the Park's Gasoline Barge, "Greenstone II"

B. Regulatory Compliance, Maintenance & Training

OPA 90

The gasoline barge is under the same OPA 90 regulations as described earlier for the Ranger III. Costs of compliance pertain to the tug & barge operation as well.

Tug Boat

Costs for Maintenance, Training, and Licensing -

The following is a recent history of the costs for maintenance, crew training, and licensing.

2001 -	$9,321
2002 -	$1,162
2003 -	$5,294
2004 -	$6,595

Inspections -

The tug will come under a new regulation requiring an inspection in 2006. Although the rules are currently being written, some of the consequences might be:

- A requirement for new equipment, mostly safety. For instance, a new towing line configuration may be required. (The standards are SOLAS-approved, not just Coast Guard.)
- A change in staffing requirements. The new regulations might require an engineer and an oiler.
- A bigger tug may be required to propel the the Greenstone II. And estimated cost is $100,000.

Note:
The new regulations will apply to commercial use (when the tug is pushing the Greenstone). The regulations will not apply if Rock Harbor Lodge gets gas & diesel from another source.

C. Analysis and Discussion about Operating Costs

Cost Analysis Validity

As with the Ranger III, cost centering the transport of particular items is difficult if a variety of items are transported. Besides, the tug & barge operation runs on an "available opportunity / as needed" basis. They may not even wait – or can afford to wait – to travel with a full load, which is a very important consideration.

Annual Budget vs. Tonnage

Nonetheless, it is worth showing the annual operating cost and tonnage transported in a given year. This is for informational purposes only, and no conclusion is provided.

Tons transported in 2004 -

Construction debris & garbage:	141.25
Equipment & building material:	671.75
Gasoline:	324.20
Aviation Gas:	90.00
Total Tons =	**1,227.20**

For FY 2005, the tug & barge budget was ...	$ 87,495
Minus it's projected revenue for FY 2005 ...	- $ 9,500
Net Operating Budget =	**$ 77,995**

"APPARENT" OPERATING COST = $ 63.60 / ton

Cost per Trip

Another perspective for the operating cost is the cost per trip. Again, the following result is for informational purposes only, and no conclusion is provided.

Net Oper.'g Budget (projected for 2005) =	$ 77,995
Trips in 2004 (actual) =	67

COST PER TRIP = $ 1,164

Conclusion

As with the Ranger III, a judgement of the tug & barge operational efficiency comes down to the question of what is reasonable?

As a percentage of the Park's total $3.5 million budget, the net operating budget of $78,000 (see above) is only 2.2%. Considering what the tug & barge operation does in supporting the island and its concessionaires, then $78,000 appears reasonable.

A few caveats need to be stated about the above budget numbers and conclusion.

1. Volatile fuel prices will likely turn the task of transportation budgeting into a guessing game. But even if fuel prices rise significantly, the price of any alternatives, such as a tug & barge contractor, would also rise.

2. There's a numberless, intangible value of having your own tug & barge operation. It gives the Park a large degree of flexibility in serving the island. Contracting out tug & barge operations may indeed be feasible (with the likely exception of fuel transport). However, most of the same issues with contracting mentioned for the Ranger III also apply here:
   - The process of contracting in-and-of itself has a cost.
   - There are insurance and liability costs.
   - There would be time and availability limitations.

3. The efficiency of the tug & barge operation is dependent on management's choice of what island facilities they want to keep supported. If management decides, for instance, that the distant Amygdaloid Ranger Station must be maintained, then they must accept an inefficient cost of support. The tug & barge crew travels 2½ hours to Amygdaloid just to do 15 minutes of fuel pumping.

D. Miscellaneous Observations & Recommendations

This section addresses the LCM's docking capabilities at Windigo.

Windigo's Landing Ramp, Tie-up Features, and Forklift

Currently, when the LCM approaches and mooring ropes are thrown to the on-shore landing crew, the on-shore crew walks through brush and ties the ropes to tree trunks. In so doing, the crew fights the near-shore vegetation simply to avoid walking in the water.

The ramp is steep and not paved. Although a huge forklift can – for the most part – load and unload the LCM, forklift access onto the LCM is a tricky maneuver. In fact, Joe Bergan said that if he must operate the forklift because the primary operator is not there, he has a difficult time and feels it is unsafe due to poor visibility of pedestrians.

Anecdote: Loading Pallets onto the LCM

On July 1st, 2005, a number of small pallets that could have been brought onto the LCM in stacked loads had to be, instead, manually unloaded off the forklift and carried onto the LCM by hand. The reason was that the LCM had been loaded to nearly full and the only remaining space was near the bow hump behind the front drop-down gate. But the forklift isn't able to drop a load near the bow hump due to being wedged, so to speak, by the steep ramp at Windigo.

Even if the pallets could have been loaded by the forklift, they couldn't have been mechanically unloaded back at Houghton due to the dip in the ramp mentioned earlier.

Recommendations

1. A concrete docking ramp textured for traction should be constructed at a more favorable grade. This would likely require grade-alteration of a length of the access road parallel to the shoreline. If a retaining wall is required on the uphill side of the access road, then the cost of the project will obviously escalate.

   Tie-up posts for docking the LCM should be installed at each side of the new ramp.

2. If the current forklift at Windigo ever needs replacing, acquire a high-clearance Pettibone. Even with construction of a new landing ramp, the steep ramp grade can be be flattened only so much. Therefore, a high-clearance forklift would be the solution.

VI. CONCESSIONAIRE FERRY SERVICES

A. The Isle Royale Line, Inc.

This ferry service operates the Isle Royale Queen IV between Cooper Harbor, Michigan, and Rock Harbor. In separate interviews with the owner and his son, both indicated that their operation and their relation with the Park is fine the way it is. Therefore, they didn't have very many comments. I've summarized four of them below:

- Since a significant number of their passengers are day-trippers and lodge guests, going to other island locations such as campgrounds would not be feasible. For the foreseeable future, Rock Harbor will remain their only island destination.
- Day-trippers are not only good for their business, but they feel that day-trippers are also good for the Park because they have little or no wilderness impact.
- They experience "pulsing" in their passenger volumes. In other words, they can have many passengers on some days and few on others.
- The Queen IV is a used boat. Its engines need replacing.

B. Grand Portage - Isle Royale Transportation Line, Inc.

1) Description of Operation

The Grand Portage – Isle Royale (GPIR) Transportation Line operates two vessels out of Grand Portage, Minnesota.

- The Wenonah sails only to Windigo and back. It currently docks at the Grand Portage Monument.
- The Voyageur II travels first to Windigo and then along the northwest side of the island to Rock Harbor where it over-nights. The next day it sails down the southeast side of the island back to Windigo, then returns to Grand Portage. It docks at Hat Point, a peninsula that forms the northern shoreline of the harbor at Grand Portage.

The Voyageur II makes a number of stops as it circumnavigates the island. It either picks up or leaves off passengers at various campgrounds or trail heads. Since it also is a certified U.S. Postal carrier, it makes stops at island homes of life-leasees. Also as a service for the life-leasees, it brings cargo such as building materials and bottled gas (with no passengers).

2) Interviews

On July 6th and 7th, 2005, I traveled on the Voyageur II and spoke with the captain at length. Then on July 26th in Superior, Wisconsin, I met with the owner of the Grand Portage – Isle Royale Transportation Line, Stuart Sivertson, and his office manager, June Lapp.

These are the issues that were discussed during those interviews.

Visitor Information for Isle Royale

For customers who are interested in visiting the Park, Fritz Gordon feels that there is lack of widely-distributed Park information. He says that he grew up in northern Wisconsin on the opposite side of Lake Superior, and he knew nothing of Isle Royale before he joined the GPIR Transportation Line.

The Park would benefit from a visitor information kiosk in Grand Portage and maybe even Grand Marais. Currently, people who want to inquire about the Park bother the boat personnel. Since Fritz and his deck hand live on the boat, they get people asking questions at all hours of the day. He says it has happened even before 6:00 a.m.

Facts and Issues Regarding the Boats

- Stuart says his boats are among the oldest of the small passenger-boats operating on Lake Superior.
- The Wenonah was built in 1960.
- The Voyageur II was built in about 1970. Its engines are 2-cycle, so they're dirty.
- One high-speed boat could take place of the two, but it would be vulnerable to weather interruptions. Four to five-foot seas would inhibit speed.
- A couple years ago, the GPIR Transportation Line had plans to replace their boats, but they didn't pursue the replacements because their contract never got renewed.
- If the boats were sized right for passengers, then they could station one boat at the island and it would only circumnavigate.

Facilities

Facilities for the GPIR Transporation Line boats are primitive. In fact, the Wenonah will need facilities period. It will be loosing its passenger parking lot to the new Grand Portage National Monument Visitor Center. Therefore, it will no longer be able to dock at the monument and, instead, will likely have to share the dock at Hat Point with the Voyageur II. The current parking space for Voyageur II passengers is an unpaved yard.

There used to be a motel at the Hat Point dock where Voyageur II passengers could get snacks and beverages, fishing licenses, and tourist information. But ever since the local tribe purchased the motel, it is being used to house Grand Portage Monument employees, and it no longer provides any services to passengers.

As a result of losing the motel, Stuart Sivertson claims that the visitor numbers have gone down for kayakers, divers, and fisherman (both private boat and charter clients). June Lapp started with the GPIR Transporation Line in 1997, and she also claims that the visitor rate has gone down.

Transport Linkages

Transport linkages are awkward, but good communications keeps things working well between the Wenonah, on-shore shuttles at Grand Portage, and the island. (A van is used for shuttles between the monument and Hat Point when, for instance, the Voyageur II takes backpackers to Rock Harbor, who then hike to Windigo and ride back to Grand Portage on the Wenonah.)

Very seldom does the Voyageur II take passengers going only to Windigo. The Voyageur II usually reserves its space for passengers going beyond Windigo.

Low cruise speeds are required in Washington Harbor and McCargo Cove add time and cost to their operation. This could be solved at McCargo Cove if the dock was moved out closer to the cove entrance.

Cultural Aspects of Isle Royale

Both Stuart and Fritz had observations and comments about the cultural aspects of Isle Royale that relate to their business.

- Delivering mail to the life leasees at Tobin and Washington Harbors is a unique cultural Park experience for their boat passengers. The leasees often meet the boat and are known to offer the crew fresh baked goods.
- Stuart has an interest in preserving commercial fishing culture on the island. He has a fishing research partnership with the Michigan Department of Natural Resoureces on Washington Island, and he would like to see that perpetuated.
- The Park seems to have an extraordinary emphasis on law enforcement. Crew members on the Wenonah and Voyageur II have been asked by passengers why the park rangers carry guns.

The Future of the Business

Desire to Increase Passengers -

Although Minnesota's north shore of Lake Superior is a heavy tourist destination, Grand Portage appears to be beyond the extent to where most tourists travel. Grand Marais, which is about 40 miles to the south, seems to be the northern-most terminus for the majority of northshore tourists.

Possibility of Acquiring a Faster Boat and Extending Service to Grand Marais -

If the company had a faster boat, they might be able to add a run from Grand Marais to Grand Portage before heading to Isle Royale. With enough speed, there would be time to take day visitors to Isle Royale. In fact, a number of passengers might choose Grand Portage as their destination in order to enjoy the monument (fur trading fort), the casino, or simply to get out on the water.

The University of Wisconsin, Superior, studied the feasibility of adding the run to Grand Marais. Their study is inserted into this report as Appendix C.

Of course, the number of passengers embarking in Grand Marais would have to be large enough to offset the price of a faster boat, the increased crew wages, and the fuel costs.

For a type of new boat, Stuart says that a high-speed catamaran would be a good option. It has high fuel efficiency, reduced wave action (ideal for the

small harbors like Washington Harbor), and they're comfortable in fairly rough seas. There is a maneuverability issue in bigger seas, however, but this can be overcome.

Current Business Inhibitors -

Stuart says that they would like to continue the business. But the franchise and dockage fees that he has to pay add up. Stuart said there was no franchise fee before the 1970's, and he was curious if bus services at other parks have to pay a franchise fee.

In order for the GPIR Transportation Line to stay in business, Forever Resorts must stay in business.

Stuart feels that Park management should re-think the revenues versus costs concept for a concessionaires operating in a remote, unique park. There are fixed costs, which Stuart says are time dependent, versus operating costs, which are variable (volume or project based).

Business Model -

Stuart devised a business model that illustrates the factors that can affect the Park visitation rate (see Figure 16). If the visitation rate is like a valve, then according to the diagram, "relative attractiveness" controls the valve and thus the visitation flow rate.

Some things that affect relative attractiveness, like the Park's remoteness for instance, can't be controlled. Other things that can be controlled theoretically by either the Park or the GPIR Transportation Line are, in actuality, not easily controlled. For a Park issue, for instance, the user fee is likely nationally mandated and, therefore, the Park must make the passenger incur that cost. For the GPIR Transportation Line, a new and bigger boat would be more comfortable for the visitors, but a new boat is likely cost prohibitive.

Conclusion -

Stuart sees the current Park culture as a "systemic thing" and that there are pressures to operate the Park as a wilderness only. But he feels that such an operational philosophy is "uni-dimensional." If the philosophy could become more diverse, then the philosophy would help increase the relative attractiveness of the Park.

To illustrate out how times can change, he pointed out that there was "Mission 66" back in 1966. When the Park wanted to improve things at Windigo at that time, they asked Sivertson's to improve their passenger

service. That's when they purchased the higher-capacity Wenonah.

But then in the 70's, the Park tore down the historic lodge/restaurant at Windigo. Without a loss of such a building, an attraction for day-visitors is lost.

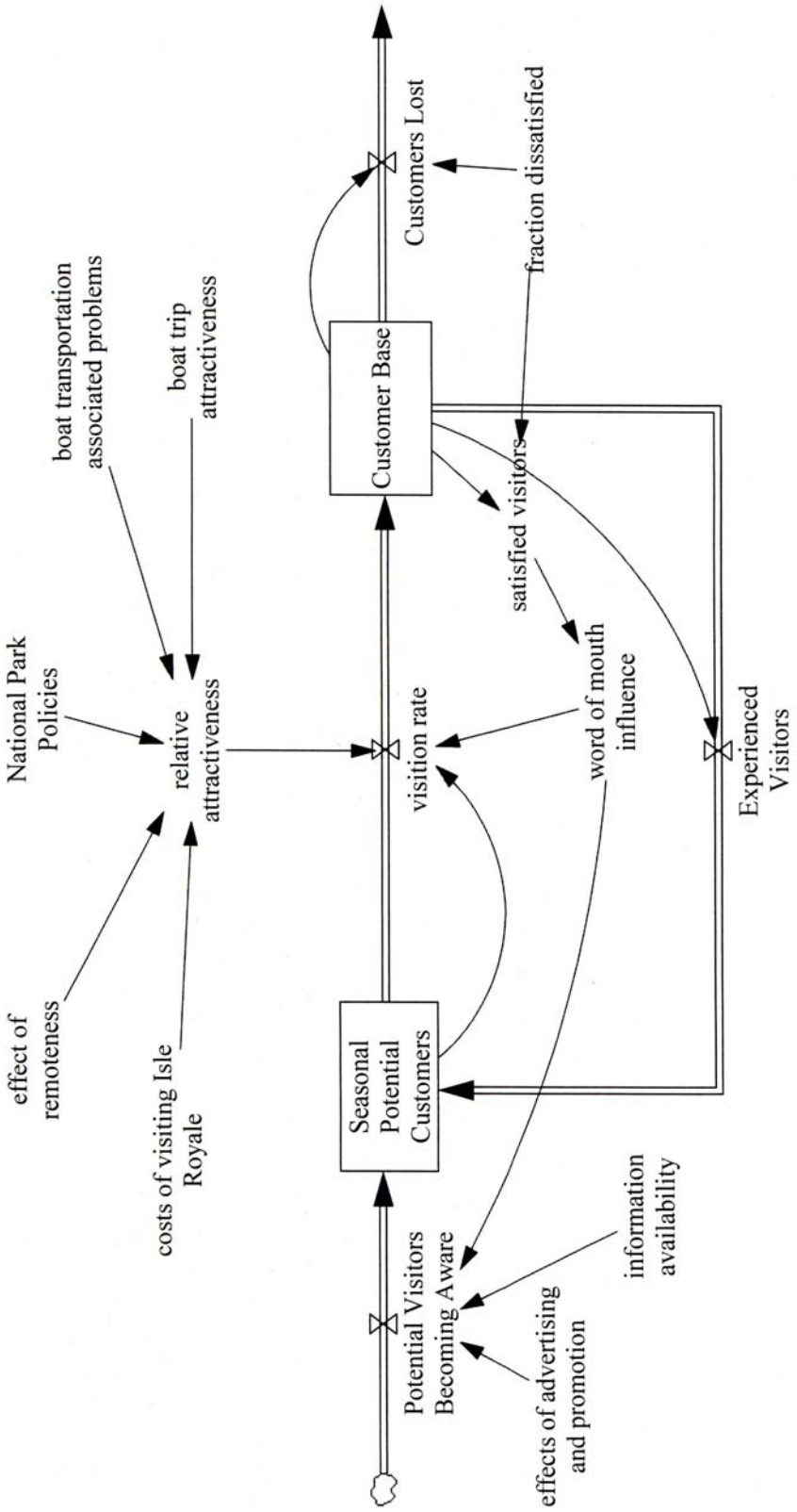

Figure 16

Stuart Sivertson's Business Model

VII. APPENDICES

Appendix A: Contract Barge Services

Three barge contractors told me they were interested in the possibility of providing tug and barge service to Isle Royale. All three were then provided with a current description of the Park's maritime transportation system and typical tonnages transported (see informational letter, Figure 17).

Two of the three contractors replied. Their written responses are shown in Figures 18 and 19, and are included in this report for informational purposes.

A lot of phone calls and e-mails were exchanged between myself and the two contactors. Nevertheless, it can be seen by their responses that even more – maybe much more – information exchange will be required before they can provide clear and thorough price quotes for their barge services.

In fact, a detailed and extensive RFP (Request for Proposal) would likely have to be written, and prospective contractors might even desire a question-and-answer meeting with Park staff before they provide more thorough quotes.

(To: Prospective Barge Contractor)

Below is the tonnage data for Isle Royale NP. But first, a little background ....

The Park currently supports Isle Royale with the 165' ship (the Ranger III) and their tug & barge operation.

During the regular season (June 1 through Labor Day), the Ranger makes two runs per week from Houghton, Mich., to the north end of the island. There it stops at Mott Island (the Park's HQ on the island) and Rock Harbor Lodge, about 5 miles apart.

The Park's tug & barge operation uses Houghton as a base for the most part. The vessels include an old transport/working barge and a new gasoline barge, both of which are propelled by a small tug (yes, it crosses the lake in a 9-hour run). The fourth vessel is a self-propelled landing craft barge.

At the south end of the island is the Windigo Visitor Center and Ranger Station. A lot of items like groceries and mail end up getting transferred from the north end down to or back from Windigo. However, the tug & barge operation does do quite a bit of service for Windigo. The Ranger services Windigo only during spring start-up and fall shut-down.

A contractor's operations would not have to use Houghton as a base. And occasional direct runs to Windigo can be considered, especially if a contractor operates out of Duluth, Minn. However, the Park Superintendent asked me to check if zebra mussels would be a problem for any vessel coming out of the Duluth harbor.

Please indicate if you WOULD or WOULD NOT tow the Park's gasoline barge. If you would, then I can get you the 2004 quantities. (I didn't list them here because I assumed this is a function you wouldn't take one due to insurance issues or whatever.)

Here is the 2004 tonnage data.

RANGER -
Delivered for logistical support of the island.
Dry cargo: 1,243 tons (includes 22 tons of refrigerated cargo)
Delivered to Rock Harbor Lodge.
Dry cargo: 145 tons (includes 20 tons of refrig'd & frozen cargo)

Note:
The 1,243 tons includes the weight of 647.3 cu. yards of garbage.
That quantity is a combined total from both Mott Island and the lodge.

TUG & BARGE
Equipment and building materials: 671.75 tons
Disposal (construction debris and garbage): 141.25 tons

Figure 17

Isle Royale transport information sent to potential tug & barge contractors.
(Note: The seventh paragraph is worded as such since, in the initial communication, the contractors had expressed a disinterest in towing the gasoline barge.)

Jack

Here are some numbers for your reference.
Just the basics.

Running time between Duluth and Houghton, Mich = 21 hours
Charge for positioning tugs = $7,500.00
Charge for returning tugs to Duluth = $7,500.00
Total running time charge = $15,000.00

Towing service of Non-Self-Propelled Barges
First four hours = $2,111.00
Next Consecutive four hours = $995.00
Each consecutive hour thereafter = $389.00

Overall cost for 12 hours of work = $19,662.00

It would be more cost efficient to Bareboat Charter a tug from Great Lakes Towing for $300 a day for the 9 month season, or to purchase a boat from Great Lakes Towing for around $100,000. Either way would speed up the tug and barge operation improving its efficiency and reducing the overall cost of the Isle Royale operation.

These are the basics I hope they help.

Kirk J. Pinto
Fleet Superintendent
The Great Lakes Towing Company
1800 Terminal Tower
50 Public Square
Cleveland, Ohio 44113
Phone: 216-621-4854
Ext: 138
Fax: 216-621-7616

Figure 18

Tug & barge Contracting Quote from *The Great Lakes Towing Company*

October 10, 2005
Jack Selmela
1412 Denney Dr.
Duluth, MN. 55805

RE: Transportation between Isle Royal and the mainland

ATT: Jack

In response to your investigation into alternate transportation for supplies to and from Isle Royle I offer the following. In general tug and barge transportation cost is around $35 to $50 per mile, this is based on current fuel prices and point of origination is not relevant at this time, but items that would impact this are as follows.
1-The tonnage per trip could impact the size vessel needed, the larger the vessel the higher the cost of operation.
2- The frequency of trips, is this part time or full time?
3-Would the vessel crew unload and load or would there be lay time?
4-What would the length of the contract be, the longer the contract the lower the price.
5-Would the contractor be required to set up his own infrastructure or would the NPS facilities be available for use.

Other question you have regarding Zebra Mussel, we can have our vessels cleaned prior to departure from Duluth. I assume we would not return until the end of the season or depending on the origination of the run or contract length we my not return to Duluth at all, it may even be possible to make the trip from the Minnesota side of the lake. We do have an interest in towing your fuel barge although I am not completely up on petroleum product regulations at this time. I do not believe there is adequate spill response available in the area at this time, however this can change.

If this idea moves forward I would be interested in working with you or the NPS in developing a scope of work to achieve a hard cost for you and the owner to analyze this concept. I hope this information is helpful and I look forward to working with you in the future.

Best regards,

Ted Smith
President

Figure 19

Tug & Barge Contracting Response from:
***Marine Tech., LLC,* 2220 Whittier Street, Duluth, MN 55803**
218-720-2833

Appendix B:

2005 Ferry & Cargo Rates Charged by Other Enterprises

Lake Chelan, Washington: Chelan to Stehekin (50 miles)

"Lady of the Lake Express" -

Round-trip ferry service:	$	54.50	per person

"Tom Courtney Tug & Barge Service" -

Construction Items			
Lumber, pipe:	$	60.00	per unit (crane pick)
Palletized items:	$	40.00	per unit
Sand & gravel:	$	3,500.00	for chartered barge
Garbage & Recycle (dump fees included)			
Loose garbage:	$	53.00	per cu. yd.
Compacted garbage:	$	60.90	per cu. yd.
Recycle:	$	38.42	per cu. yd.

Lake Superior: Bayfield, Wisconsin, to Madeline Island (2.6 miles)

"Madeline Island Ferry Line" -

Bldg. mat.'ls, garbage:	$	7.00	per ton (net weight)

Lake Michigan: Charlevoix, Michigan, to Beaver Island (32 miles)

"Beaver Island Boat Company" -

Round-trip ferry service:	$	35.00	per adult
Palletized masonry items:	$	41.73	per ton
Groceries			
Paper bag :	$	1.07	each
Plastic bag:	$	0.54	each
Ice Cream:	$	25.68	per freezer
Beer/pop, 100 cases:	$	77.04	per pallet (cans only)

Containers		
Small box:	$	1.07 each
Med. box (banana):	$	2.14 each
Large box:	$	3.21 each
Coolers		
Small (6 pack):	$	1.07 each
Medium:	$	2.14 each
Large:	$	3.21 – 7.49 each

Lake Michigan: Door peninsula, Wisc., to Washington Island (a few miles)

"Washington Island Ferry Line" -

Misc. large freight:	$	7.50 per ton (net weight)

Lake Michigan: Muskegon, Michigan, to Milwaukee, Wisconsin (75 miles)

"Lake Express" (a high-speed catamaran) -

Round-trip ferry service:	$	85.00 per adult

Appendix C:

Study Performed by the University of Wisconsin, Superior

[To be sent separately.]